Introducing **forensic technology** to facilitate better **crime scene management & investigation**

The Ethemba Forensic Group hosted various workshops from 20 to 24 June 2016, during which they showcased an array of new forensic technologies available from international suppliers which can assist in a variety of activities relating to crime scenes.

Approximately 50 SAPS members, including crime scene technicians and crime scene managers from Gauteng, North West, Limpopo, Mpumalanga and the National Criminal Record and Crime Scene Management Division, attended the different workshops in Kempton Park. They were ready to learn how technology would assist them to improve crime scene investigation, crime scene recovery and laboratory investigations.

During the workshops the delegates had the opportunity to test the latest state-of-the-art forensic equipment in a simulated work environment, and to evaluate the equipment to see how the SAPS can best utilise it to improve productivity and crime scene recovery. The delegates also had an opportunity to determine whether or not a combination of the different technology and methodologies would provide them with an improved complete solution in crime evidence processing.

International experts were on hand to share their knowledge and showcase the functioning and effective utilisation of the technology. These experts were Richard Evans and Owen Lang from Foster & Freeman UK; Norbert Jaufmann from Attestor Forensics, Germany; Patrick van Vilsteren from BVDA International in the Netherlands; and James Price from West Technology Forensics in the United Kingdom.

An additional workshop focusing on document examination was also held and attended by representatives of the Department of Home Affairs and the SAPS’s Questioned Documents Unit in Pretoria. Delegates were given a demonstration of the capabilities of the VSC 8000 document examination device. One of the advantages of the device is that the VSC 8000 can be used in conjunction with the PD2000, which is a remote capturing device. This opens up possibilities in terms of remotely examining travel documents, which can positively impact on the following:

- control of entry and exit through the many land, sea and air ports of entry in South Africa;
- safe remote interdepartmental document examinations of various documents including ID books and cards, permits, passports, certificates etc; and
- remote examination of input documents from the private sector, including private individuals’ documents, bank documents and applications for ID cards as well as general examinations.

If you have ever seen 360° x 180° capturing devices in action, you would agree that these devices provide an excellent way to document a crime or vehicle crash scene and enable you to present a virtual tour thereof in court. To demonstrate the capabilities of the crime scene diagramming, the Ethemba Forensic group presented the Civetta 360° x 180° fast capture system with the use of a visual asset management system. A mock crime scene was set up to showcase how 360° diagramming would take place to simulate an actual scene. The delegates were also shown how the evidence can be tagged for visual representation on the scene. The features of the new Civetta (the Owl) are remarkable, particularly the fact that it takes only 40 seconds per 360° x 180° spherical capture at an extremely high resolution of 100 mega pixels. Until now, the 360° capture systems usually took up to around 30 minutes to capture at 50 megapixels. At only 40 seconds capture time and 100 megapixel resolution, the new Civetta is likely to revolutionise 360° crime scene capturing.

When dealing with any type of evidence, the court can, at any stage, question the chain of evidence, and it is no different when working with digital applications, especially since many fear the manipulation of digital evidence. The web-based VAM software allows for the allocation of various team members through strict access control flows so that...
the team members can work on the case back at the office. Thanks to a high integrity security and audit trail, presentation in court can take place with complete confidence.

Other products that were demonstrated included the following:

- *fps Natural IR fluorescent powder* - this powder gives amazing visualisation and captures of fingerprints and palm prints from many crime scene assets.
- **The Crime-Lite Imager** - this product incorporates infrared facilities so that the new *fps Natural* fingerprint powder can be used. Capturing and transferring fingerprint and palm prints from crime scene exhibits can now easily be achieved, to levels that are not possible with any other system.
- **New Fingerprint Comparison Software (FCS)** - this software can be uploaded onto any PC or notebook computer and gives users the ability to compare crime scene captured fingerprints alongside fingerprint records or a suspect’s inked prints. In this way, fingerprint comparisons can easily be accomplished at high magnification on a computer screen. The system also provides for the sizing of photographed fingerprints from crime scenes so that the correct size and quality of captured fingerprints can be submitted to AFIS. Another function embodied in the system is the capacity for a localised office database, so that these fingerprints can also be searched at scenes, should this be required. In addition, remote comparisons can easily be made under strict standard operating procedures, allowing for independent review so as to avoid misidentification.

Various other forms of technology dealing with various aspects of investigation including narcotics, blood spatter, shoe prints and gel-lift scanners were introduced to the delegates, and their functioning and advantages were explained and demonstrated. These included the Crime-light B2L, which is used for the recovery of evidence, ie shoe-prints from crime scenes; the new SoleMate and FPX identification system for shoe impressions; the GLScan-FP gel lift scanner which enables extremely high quality scanning of gel lifts (folien); and the SCENEview BV800, which is a bloodstain and spatter viewer.

A demonstration given during a separate workshop which was hosted from 30 May to 3 June 2016 and which was presented by Mr Damien Touidjine and Mr Kayetano Buetas from Protecsa, in Spain, about the capabilities of the aunav.NEXT robot, made for fun learning. In addition to being left in awe at the precision with which this robot can be operated, *Servamus* witnessed the aunav.NEXT robot’s ability to pick up an object as small as a coin from the ground. A field exercise was also done at the Moloto Training Academy where the demonstrator showed how the aunav.NEXT robot could be manoeuvred to gain access to the inside of a vehicle, either by breaking open a car window or by bending the sheet metal to gain access to the boot or open a car door. This function means that officers won’t need to shoot at an object to gain entry. The practical exercise at Moloto also confirmed the ease with which this robot can operate on all terrain - in this case, typical off-road terrain. This robot can even climb stairs with an incline of up to 45°!

The aunav.NEXT robot has a second arm and the grip can be rotated 360°. It was developed alongside the Spanish National Police and their bomb squad to fight terrorism in Spain. This robot, which can be used for bomb deactivation, has a weight lifting capacity of up to 250 kg and, thanks to its precision, as mentioned earlier, it allows bomb squad personnel to effectively react when handling devices in Explosives Ordinance Disposal (EOD) operations, as well as when bombs are suspected to have been planted inside a vehicle or where bombs may incorporate chemical, biological, nuclear and radiological threats.

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The value of a workshop often lies in whether or not the delegates believe that what they’ve seen, heard and tested would make a positive impact on their work - in this case, their work relates to dealing with crime scenes and evidence. Feedback from these delegates, regarding the different workshops included the following:

- “Almost all the equipment presented is needed in order to solve our escalating crime problem.”
- “It is amazing to see what is available. With this equipment and the right operators, great success will be achieved.”
- “[We are] impressed. All the equipment demonstrated is of the highest quality and level. The use of this equipment will not only professionalise our work but increase conviction rate(s).”
- “It shows that what we thought was impossible is possible, if we put more effort into our crime scenes.”
- “It can really help our organisation a lot if equipment of this kind can be part of our organisation.”
- “This workshop was informative and fruitful. I learned a lot from it - from my view it was well-planned and professional. If we can have more of these workshops the SAPS will be a different place and a different organisation. I enjoyed myself and I hope that there will be more presentations soon. Thank you for these wonderful workshops.”